

## REMARKS

The claims are 11 to 21.

The above amendments to the specification delete references to the claims at pages 7-9.

No new matter is added.

### Claim Rejections - 35 USC § 103

Claims 11-21 are rejected under 35 USC § 103(a) as being unpatentable over Billmers et al. (US 2002/0015854) in view of Hendriks (US 5,538,668).

This rejection is respectfully traversed.

#### Prima facie obviousness

The prior art does not disclose or suggest an oil-resistant sheet material containing a hydrophobized starch, crosslinking agent, and fatty acid. Furthermore, the prior art provides no motivation or suggestion to combine a fatty acid with a hydrophobized starch and crosslinking agent as presently claimed.

Billmers et al. disclose a paper coating composition comprising a blend of hydrophobically modified high amylose starch and polyvinyl alcohol. See Billmers et al., Abstract. Billmers et al. mentions the possibility of including crosslinked starches at paragraph [0016]. Billmers et al. does not mention the inclusion of fatty acids in their compositions.

Hendriks discloses compositions and methods for controlling foam in a coating solution during papermaking operations. The disclosed composition comprises a polyether surfactant and polyethoxylated sorbitol hexaoleate. Hendriks mentions in column 1 that conventional defoamer/anti-foam compositions may include fatty acids. However, Hendriks does not mention the inclusion of fatty acids in compositions that include a hydrophobized starch and a cross-linking agent in the amounts that are presently claimed.

Hendriks mentions at column 2, lines 48-51 that the concentrations of the defoam/anti-foam agent is in the range of 1.0 to 500 ppm, preferably from 10 to 100 ppm. These amounts are

far less than the fatty acid concentrations recited in claim 1 of from 1 to 50% by weight and claim 21 of from 3 to 15% by weight. This is also generally consistent with the fact that it is well known in the art that defoaming agents are used in extremely small amounts and generally below the lower limit of 1% presently claimed.

Accordingly, the prior art does not disclose or suggest an oil resistant sheet material containing a hydrophobized starch and a crosslinking agent, that further includes a fatty acid in the amounts presently recited in claim 1. Furthermore, the prior art clearly does not disclose or suggest the invention of claim 21. This rejection should be withdrawn on this basis alone.

In addition, the prior art provides no motivation or suggestion to combine a fatty acid with a crosslinked hydrophobized starch. It is well established that the Office should identify some suggestion or motivation for combining or modifying the teachings of the prior art to produce the claimed invention. See MPEP §2143.01(I), citing *In re Kahn*, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006) (“Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so.”).

Hendriks mentions that fatty acids may be used as defoaming agents in conventional hydrophobized starch compositions. Hendriks provides no motivation or suggestion for using fatty acids in compositions which include a hydrophobized starch and a crosslinking agent. The Hendriks disclosure clearly teaches that the known use of fatty acids in the context of their invention is to reduce foaming in a coating solution.

The invention of claim 11 is therefore not a combination of known elements to yield predictable results, or the application of a known technique to yield predictable results. See generally, MPEP §2143. The predictable result to one of ordinary skill in the art based on the teaching of Hendriks, would be that fatty acids can be used to reduce foaming in a coating solution in papermaking operations. The present invention is directed to a sheet that exhibits improved oil resistance and air permeability properties. See e.g., present specification, paragraph [0010].

In addition, the prior art provides no motivation or suggestion to one of ordinary skill in the art to arrive at the invention of claim 12. The specification describes on page 17, paragraph [0036] that the use of polyvinyl alcohol to prevent agglomeration was known in the art, but that polyvinyl alcohol is also known to increase air permeability of the coating. However, in the present invention the combination of polyvinyl alcohol with a fatty acid produces a coating layer that has decreased agglomeration, as well as good air permeability properties.

There is therefore no motivation or suggestion to combine Billmers et al. and Hendriks to arrive at the inventions of claims 11 and 12, and a *prima facie* case of obviousness is not established. Since claims 13-21 depend upon claims 11 and 12, these claims are allowable as well.

#### Unexpected results

In addition, the specification provides evidence of unexpected results which fully rebut any hypothetical assertion of *prima facie* obviousness, in particular, with regard to the use of a fatty acid with polyvinyl alcohol as recited in claim 12, and with regard to use of a fatty acid sizing agent as recited in claim 19. See e.g., Examples 7-12 of the present specification. It is completely unexpected that the combination of polyvinyl alcohol and a fatty acid would produce a coating material with decreased agglomeration and good air permeability characteristics as well. See also, paragraph [0036] of the present specification. It is also completely unexpected that an oil-resistant sheet material can be improved by using a fatty acid sizing agent instead of other fatty acids.

Unexpected results are further demonstrated by the attached Akiyama Declaration under 37 C.F.R. §1.132. The attached Declaration shows that the combination of a polyvinyl alcohol and a fatty acid produces a coating material with good oil resistance and good air permeability characteristics. The Declaration further shows that the oil resistance of a sheet material is further improved by use of a fatty acid sizing agent.

Accordingly, the Declaration fully rebuts any assertion of obviousness.

Dependent claims

With regard to claims 19-20, the prior art does not disclose or suggest the use of a fatty acid with a fatty acid sizing agent, or a fatty acid modified by an epichlorohydrin-group containing chemical. As discussed above, the prior art merely refers to a fatty acid as a defoaming agent. Accordingly, the prior art does not disclose or suggest the modified fatty acids recited in claims 19 and 20.

With regard to claim 21, the prior art does not suggest the use of fatty acids in a coating layer in amounts of from 3-15%. As discussed, the defoaming agents mentioned by Hendriks are indicated as being present in only extremely small amounts (in the ppm range). See Hendriks, column 2, lines 47-51. Therefore, the prior art does not disclose or suggest the use of a fatty acid incorporated in the amounts recited in claim 21, and this claim is allowable.

Conclusion

In view of the foregoing, it is submitted that the rejection on prior art has been overcome, and that this application is now in condition for allowance.

No further issues remaining, allowance of this application is respectfully requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact undersigned at the telephone number below.

Respectfully submitted,

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